

## PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION  
Improved Sanitary Napkins

We, JOHNSON & JOHNSON, a Corporation of the State of New Jersey, United States of America, of 501, George Street, New Brunswick, New Jersey, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to sanitary napkins and is primarily concerned with the disposable variety composed of absorbent pads covered by outer wrappers of novel construction for controlling the liquid flow and the liquid absorbency characteristics therein.

Present sanitary napkins have outer wrappers of various forms. If the wrappers are too absorbent, liquid impinged upon the surface will tend to spread by wicking and capillarity over the surface. This causes a large stain area, making the napkin feel wet and uncomfortable to wear and leading the wearer to conclude that the napkin has become saturated with absorbed liquid and should be replaced. Actually, the napkin may not have exercised its potential absorbent capacity at that time.

Accordingly, it would be desirable to restrict the formation of large stain patterns on the surface of a wrapper by imparting non-absorbent characteristics to the wrapper to reduce the spread of liquid by wicking and capillarity. However, excess non-absorbency would cause the wrapper to repel liquid placed on the surface and would not permit the liquid to penetrate into the interior of the napkin into the absorbent components.

It is an object of the present invention to provide a sanitary napkin having an outer wrapper made of a combination of absorbent and non-absorbent fibres to provide means for controlling the spread of liquid over the surface of the napkin and into the enclosed absorbent pad to thereby allow the absorbent

capacity of the pad to be used more fully. In addition, the use of non-absorbent fibres provides an outer wrapper which is softer and more comfortable to wear than an outer wrapper composed entirely of absorbent fibres. It is proposed to make the outer wrapper of non-woven fabric.

Within the scope of the invention, the outer wrapper may be formed by a woven fabric having an outside facing composed of absorbent and non-absorbent fibres.

Accordingly the present invention resides in a sanitary napkin comprising a centre pad of absorbent material and an outer non-woven fabric wrapper therefor, said fabric wrapper having a fibrous content consisting solely of a mixture of both non-absorbent and absorbent fibres.

Any of the standard fibres may be used to form the outer wrapper and, if desired, absorbent fibres may be treated to render them non-absorbent, although it is preferred to use the fibres which are naturally non-absorbent.

If desired, adhesives may be used to bond the outer plies of the inner plies.

The invention also includes an outer non-woven fabric wrapper for a sanitary napkin, said wrapper being made of absorbent fibres and having an outer facing composed of non-absorbent and absorbent fibres.

Other features of the invention will appear from the drawings and detailed description to follow which relate to one exemplifying embodiment of the invention.

Referring to the drawings:—

Fig. 1 is a plan view of a sanitary napkin embodying the present invention, with the five-ply web of the outer wrapper cut away to shown the centre pad of absorbent material; and

Fig. 2 is a view partly in section taken on the line 2—2 of Fig. 1 and discloses the five-ply web around the centre absorbent pad.

Referring now to the drawings, the sanitary

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napkin 10 is broken away to show the interior components. The outer wrapper 13 covering an absorbent pad 11 is preferably made of non-woven fabric consisting of a five-ply web, with the outer-most ply formed of both non-absorbent and absorbent fibres and with the four inner plies formed wholly of absorbent fibres.

The five-ply web 13 may be made by combining in laminar relationship four laps of rayon fibres and an outside blended lap composed of both non-absorbent and absorbent fibres in the ratio of 25% non-absorbent fibres to 75% of absorbent fibres, resulting in an overall ratio of 5% of non-absorbent fibres to 95% of absorbent fibres throughout the whole body of the five-ply web. The non-absorbent fibres used in the outside ply may be and preferably are bleached cotton fibres which have not been secured with caustic and which thus retain their naturally liquid repellent properties due to the presence of oils, waxes and the like. However, the non-absorbent fibres may be other suitable fibres treated for non-absorbency. In the preferred form it is proposed to use cotton fibres, both absorbent and non-absorbent, in the outside ply and all rayon absorbent fibres in the four inner plies. The outer wrapper 13 has the usual end tabs 12 extending beyond the ends of the centre absorbent pad as a means for supporting the napkin in place.

The advantages of this new type of outer wrapper are two-fold. First, the five-ply web outer wrapper provides a means for controlling the spread of the fluid over the surface of the napkin when it is in use, thereby providing greater control and protection. Second, the addition of the non-absorbent cotton fibres provides a much softer exterior than can be obtained by using absorbent cotton or rayon fibres, thereby minimizing discomfort due to rubbing and chafing.

The improved result obtained by combining the non-absorbent fibres with the absorbent fibres will now be clear. If the outer wrapper is too absorbent, the liquid tends to spread by wicking and capillarity throughout the wrapper before the liquid has penetrated into the centre pad, thus making the napkin feel wet and uncomfortable over its surface and also causing a feeling that the napkin should be discarded. The addition of the non-absorbent fibres restricts the spread of the liquid by wicking and capillarity and causes it to go through the wrapper into the absorbent pad. An excess of non-absorbent fibres would lead to failure of the napkin by restricting too much the passage of the liquid into the centre pad. A cover containing an excess of non-absorbent fibres would exhibit a property more repellent than absorbent. The optimum amount of non-absorbent fibres throughout the whole body of the wrapper was found to be 5%, although a

lower percentage, say 2-1/2%, will produce good results. When the non-absorbent fibres are present only in the outside ply of a multi-ply fabric wrapper, the percentage of said fibres in that ply could vary from 12-1/2% to 25%.

It must be remembered that there are two factors involved in controlling the flow of liquids through fabrics. The first is porosity and the second, absorbency, and, according to the invention described herein, both of these factors are taken into account. The addition of the non-absorbent fibres controls the absorbency and thereby takes better advantage of porosity. The end result is controlled fluid spread and penetration.

It will be understood that the outer wrapper described herein and shown with an ordinary absorbent centre pad may well be used with any of the flow-control centre pads such as those of conventional form and of material like comminuted wood pulp, paper cotton fibres or other absorbent material. It will also be understood that different ratios between the numbers of outer plies and inner plies may be used to make the wrapper.

#### WHAT WE CLAIM IS:—

1. A sanitary napkin comprising a centre pad of absorbent material and an outer non-woven fabric wrapper therefore, said fabric wrapper having a fibrous content consisting solely of a mixture of both non-absorbent and absorbent fibres.

2. A sanitary napkin according to claim 1, wherein the non-woven fabric outer wrapper is composed of from 2-1/2% to 5% of non-absorbent fibres.

3. A sanitary napkin according to claim 1 or 2 wherein the fabric of the wrapper is in the form of a multi-ply web with an outside ply of non-absorbent and absorbent fibres.

4. A sanitary napkin according to claim 3, wherein the outer non-woven fabric wrapper is composed of an outside ply of non-absorbent and absorbent fibres and a plurality of inside plies of absorbent fibres.

5. A sanitary napkin according to claim 3 wherein the non-absorbent fibres in the outside ply are soft cotton fibres.

6. A sanitary napkin according to claim 3 wherein the outer non-woven fabric wrapper is composed of an outside ply of non-absorbent and absorbent cotton fibres and a plurality of inner plies of absorbent rayon fibres.

7. A sanitary napkin according to any one of claims 3 to 6, wherein the proportion of non-absorbent fibres in the outside ply controls the penetration and spread of fluid in said napkin.

8. A sanitary napkin according to any one of claims 3 to 6 wherein the proportion of non-absorbent fibres in the outside ply is from 12-1/2% to 25%.

9. A sanitary napkin constructed and

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arranged substantially as hereinbefore described and shown in the accompanying drawings.

- 5 10. An outer non-woven fabric wrapper for a sanitary napkin, said wrapper being made of absorbent fibres and having an outside facing composed of non-absorbent and absorbent fibres.

- 10 11. An outer fabric wrapper according to claim 10, wherein the percentage of non-absorbent to absorbent fibres in the outside

facing is such as to reduce the absorbency of said outside facing and limit fluid spreading therein and thereby cause the fluid to flow more freely through the pores of the wrapper. 15

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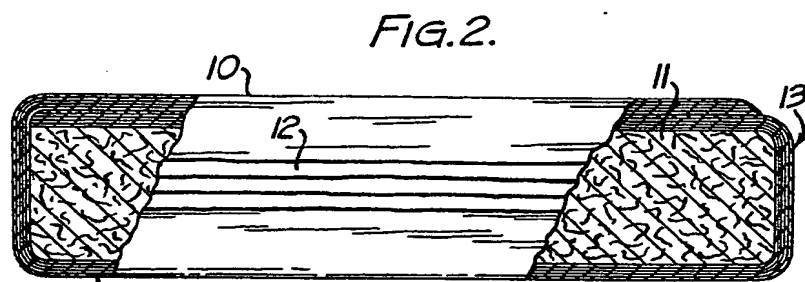
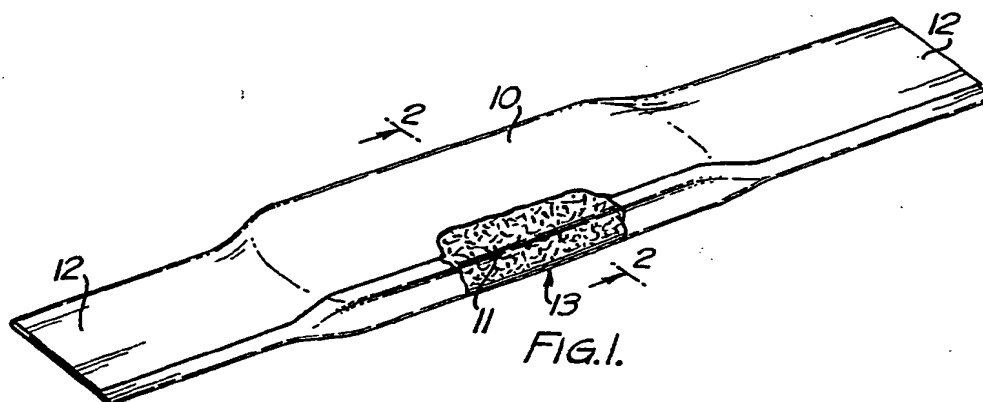
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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of  
the Original on a reduced scale.



Outer layer of absorbent  
and non-absorbent cotton.